

Submission to the Royal Society of Edinburgh

Review of potential hydroelectric development in the Scottish Highlands

In submitting the enclosed article, written twenty five years ago, I find there is little need for change to bring the paper up to date. This was written at a time when a sense of public ethos permeated the electrical supply industry that is reflected in the text. The concern of rising costs for uranium fuel did not materialise and the development of fast breeder technology was discontinued with fears for nuclear proliferation. This denied the elegant recycling of fuel retrieved from nuclear power stations already existing. Another significant attribute was the designed capability for two shifting, thereby not being constrained to base load operation.

Another amendment has been the closure of the smelting facility at Kinlochleven. The refurbishment of this generation facility after more than ninety years of service provides a remarkable testimony for the durability of hydroelectric plant but also reveals the distortion that arises from subsidy. A recent publication entitled 'Subsidies and Subterfuge' illustrates this condition. The summary of argument on page 3 and figure 1 on page 7 encapsulate the problem that is well expressed from pages 10 to 15. The point is well made that the cost to the public would have been better served by a (questionable) subsidy payment for refurbishment rather than its inclusion within the Renewables Obligation Scheme.

The existence of subsidy is deeply distorting for investment decision making and in a climate of intervention and regulation with unstable payment regimes, future energy provision will be dearly bought. Electrical supply provision is strategic with both its fuel sources and final use to the consumer circumscribing the normal interplay of market forces. It has to transcend short-term fluctuations, it is difficult to envisage nuclear power or tidal barrages being funded without state resource and any comprehensive exploitation of conventional hydroelectric capacity, with its considerable up front costs for development, would come into this category.

There are two further restraints that impede hydro development and both are institutional. The demands of the environmental lobby absorb considerable executive time for its resolution and present a hidden impediment. A more recent obstacle affecting most projected schemes has been a European directive preventing future abstraction of water flows from adjacent catchment areas. Whilst understandable in a continental context, its application for Scottish Highland conditions seems unwarranted.

Since the article was written I have investigated a scheme that utilises flows to greater effect which was favourably costed when submitted under a suggestion scheme. It diverts the Fada component (35MW and 96MkWh) of the Fada-Fionn proposed scheme in Table 1 to become part of a cascade development having a 25MW power station producing 45MkWh per annum feeding a 100MW power station providing 192MkWh per annum. Extracted flows would deny 30MkWh from the existing Conon scheme. This improvement illustrates the complexity of resource exploitation and presents an explanation for the improving estimates with time as explained in my article.

A final amendment relates to Table 1 in the paper where I believe the A'Bhraoin scheme has been compromised by a recent run of river development. Under present arrangements this sterilisation of resource could well become an increasing problem.

Derek G Birkett 22nd August 2005

Enclosures: Review of potential hydroelectric development in the Scottish Highlands (May 1979)

Subsidies and Subterfuge, Scottish Wind Assessment Project (June 2005)